CHAPTER 4

60K LOW-VELOCITY AIRDROP SYSTEM

4-1. Description of 60K System.

The 60K low-velocity airdrop system consists of a 60K parachute release, a 60K EFTC, a 60K extraction panel for the type V platform, G-11 cargo parachutes (modified) clustered in pairs to large clevises, and 100-foot (3-loop), type XXVI riser extensions, suspension two point link, extraction rope and suspension ropes. All other items are standard type-classified. The 60K system employs single or linked type V platforms in two, three, or four sections. When platforms are linked, the truss assemblies bolted along the sides of the platforms provide support and a means of linking the platforms. A 60K load is suspended by a set of cargo parachutes connected to a single release. The single platform is item suspended and platform extracted, using the special 60K type V extraction panel. On linked platform loads, the 60K extraction panel must be on the rear platform. The system is capable of 60,000 pounds (rigged weight). The equipment description and data for linked platforms are shown in Figure 4-1. The location and description of major components are shown in Figure 4-2.

EQUIPMENT DESCRIPTION AND DATA FOR LINKED PLATFORMS

Characteristics.

1. Platform is truss-supported to resist bending loads between platforms.
2. Pins link platforms together.
3. Truss braces support truss assemblies laterally.
4. Rail extension sets the spacing between platforms.
5. Rail braces support rail extensions laterally.

Capabilities and Features.

1. Up to four platforms may be connected and airdropped together.
2. Trusses fold down for storage of platform.
3. Hydraulic cylinder resists positive rotation of platforms during airdrop.

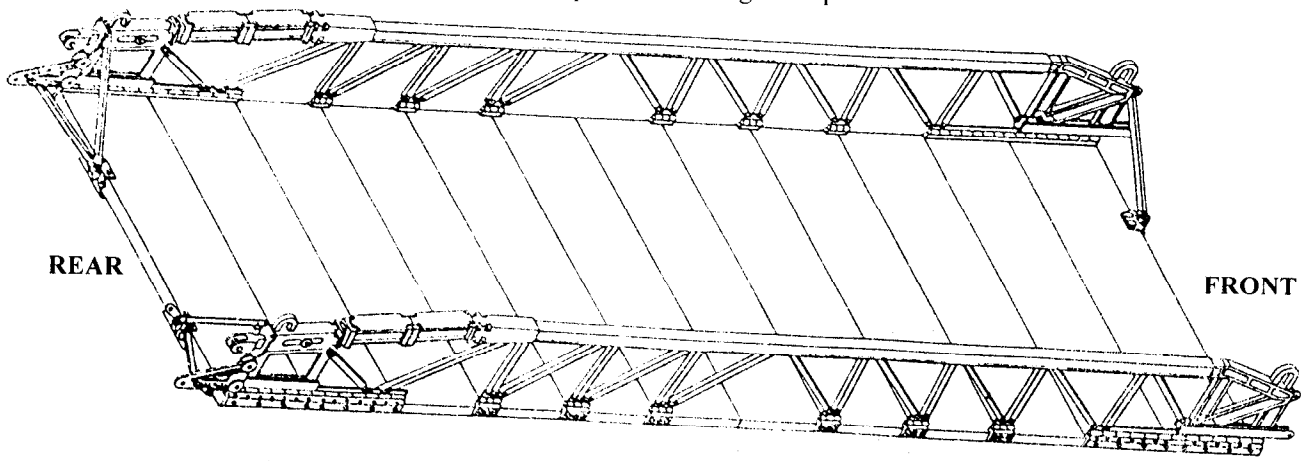
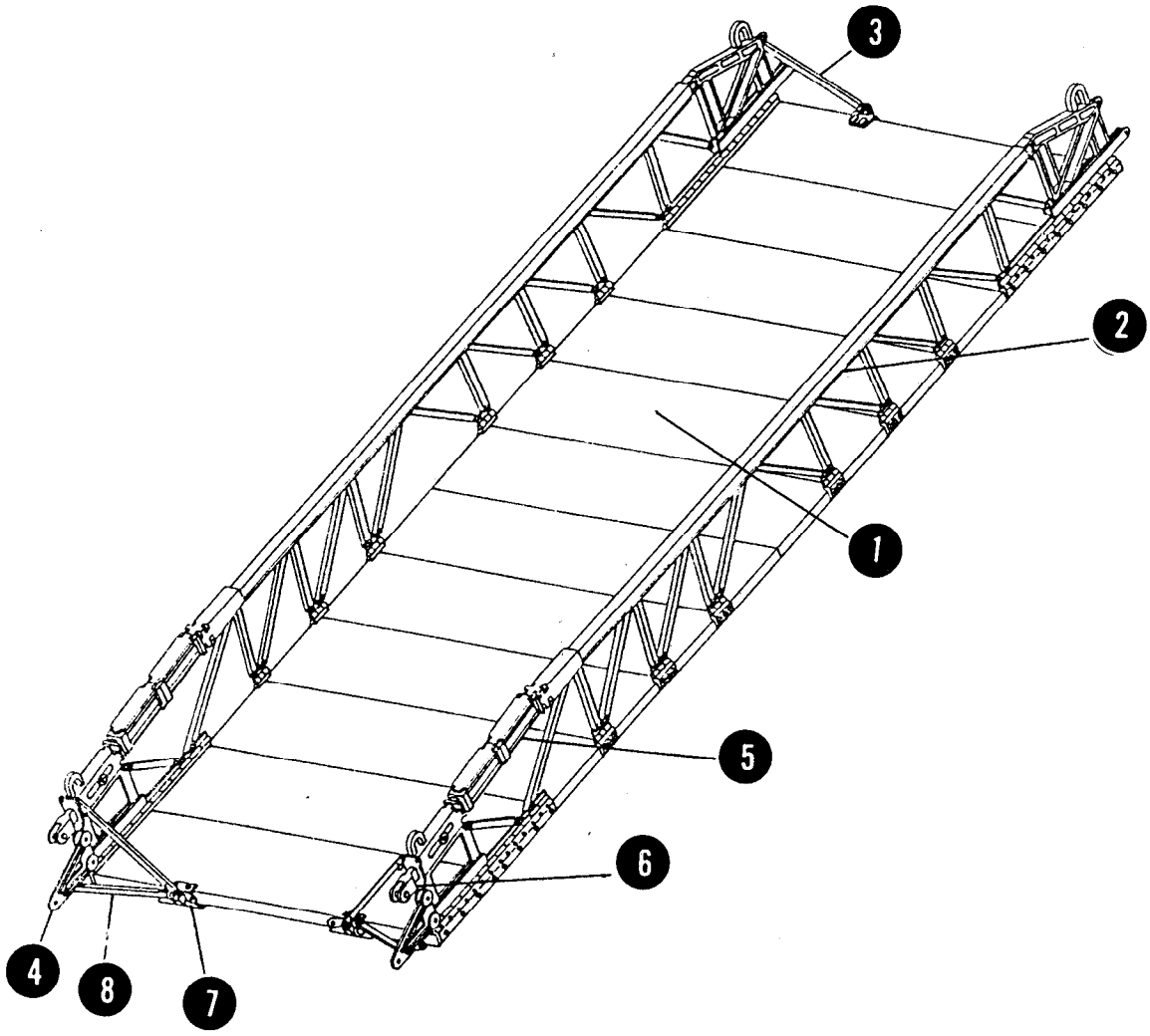


Figure 4-1. Equipment description and data for linked platforms

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



1 **TYPE V PLATFORM.** Provides the base.

2 **TRUSS ASSEMBLY.** Provides structural support for the platform.

3 **TRUSS BRACE.** Provides lateral support of truss assembly.

4 **RAIL EXTENSION.** Provides connecting point and spacing between platforms.

5 **HYDRAULIC CYLINDER.** Dampens positive angular displacement of platform assembly.

6 **CONNECTOR LINK.** Movable link connecting hydraulic cylinder to adjoining platform.

7 **BRACE CONNECTORS.** Provides mounting points for braces to platform.

8 **RAIL BRACE.** Supports rail extension laterally.

Figure 4-2. Location and description of major components

4-2. Platforms For 60K Airdrop System

a. Single Platform Loads. Platform lengths of 28 and 32 feet can be used for single platform 60K low-velocity airdrop. Load weight, CB, and requirements of the dual rail locking system must be considered.

b. Linked Platforms. Type V platforms of 12, 16, 20, and 24 feet are used. The combination of platforms used is determined by the drop items, their center of gravity, and the length of the aircraft cargo compartment. The type V side rail and clevis arrangement remains the same, except that the truss assemblies may interfere with the angle and direction of restraint for the four corner clevises on each platform.

c. Truss Assemblies. These are the chief distinguishing characteristics of the 60K (linked) system. A truss section of like length is bolted directly to the platform side rail. They are hinged so that they can be dropped inward to facilitate platform storage, or outward for rigging or derigging the load. The trusses are held in place vertically on the platform by truss braces. Each truss has a hydraulic cylinder which restricts the degree of rotation between linked platforms. The platforms are linked together in the aircraft by pinning the connector links and rail extensions together. The suspension slings are bolted to the prominent lifting eyes on each of the trusses.

Note: Items rigged on linked platforms are limited to 100 inches in width.

d. Truss Assembly Rail Extensions. The rail extensions are, like the trusses, sized according to platform length. It is important to use the correct rail extension for the length of platform you have. The rail extensions are stamped with the length of the platforms they fit. Table 4-1 gives the resulting spacing between platforms of various lengths when the proper rail extensions are used.

Table 4-1. Distance (in inches) between platforms

DISTANCE (IN INCHES) BETWEEN PLATFORMS

Platform Length (Feet)	12-Foot	16-Foot	20-Foot	24-Foot
12	16"	17"	18"	19"
16	17"	18"	19"	20"
20	18"	19"	20"	21"
24	19"	20"	21"	22"

e. Rear Panel, 60K Platform. The extraction bracket assembly is an integral part of the rear panel. The panel is bolted to the rear of a 60K load in place of the conventional type V panel. Figure 4-3 shows the 60K rear platform panel.

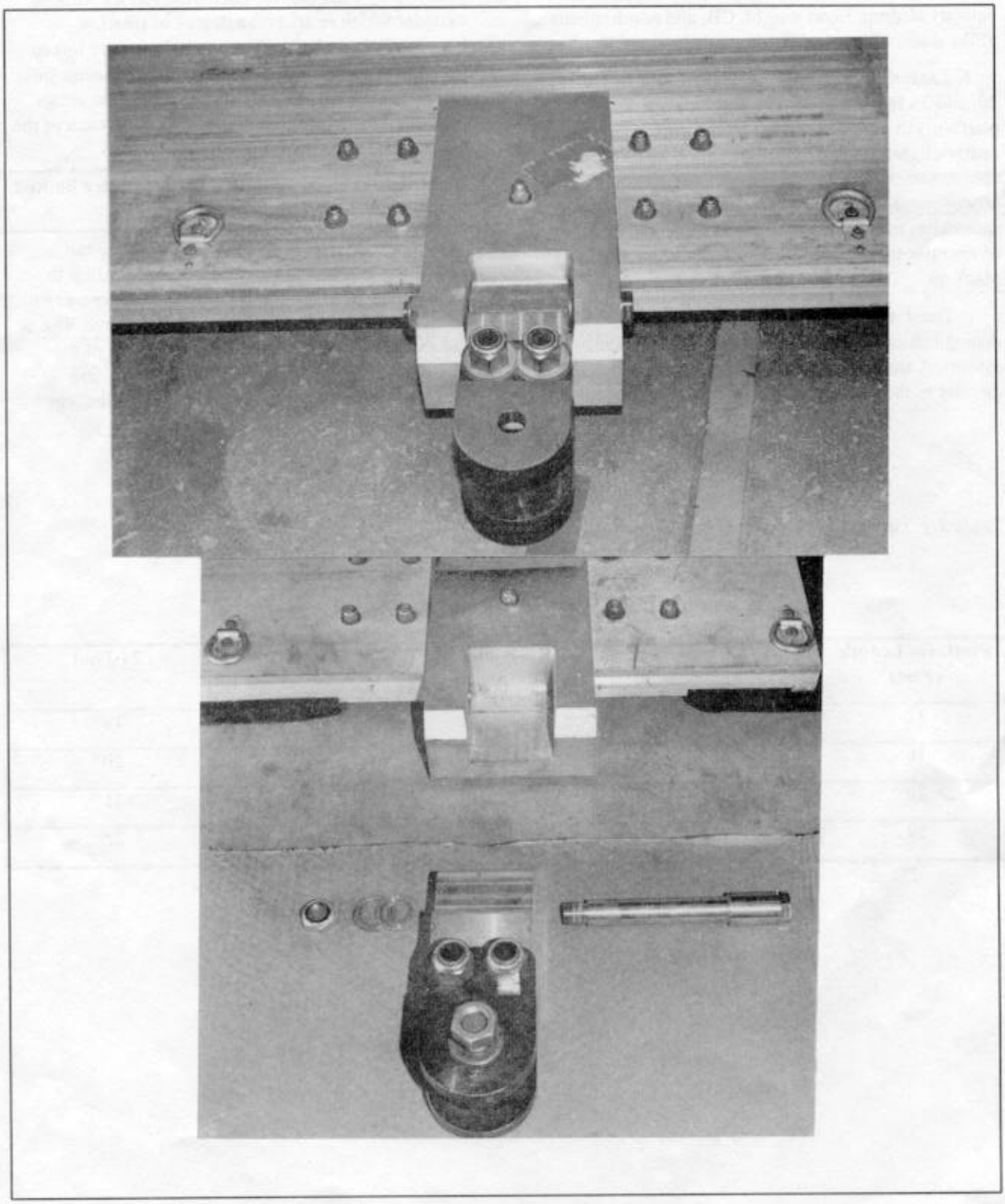


Figure 4-3. 60K rear platform panel

f. Platform Weights With Trusses. Table 4-2 gives the various platform weights with trusses.

Table 4-2. Platform weights with trusses

PLATFORM WEIGHTS WITH TRUSSES

12-Foot	2,460 Pounds
16-Foot	3,040 Pounds
20-Foot	3,720 Pounds
24-Foot	4,620 Pounds

4-3. Suspension Slings for 60K Airdrop System

The suspension sling configuration will be given in the rigging manual for each specific load. Each load arrangement must have a suspension sling system specifically designed for it. The sling system will be designed with these considerations:

a. The platform assembly must hang as level as possible.

b. The end platforms can pitch upward slightly, but must not be allowed to pitch downward.

Suspension slings are attached to lifting eyes on trusses with large screw-pin clevises (Clevis, suspension w/screw-pin sleeve, NSN 4030-00-432-2516). The suspension slings will be secured to the truss rails or to convenient points on the load. Slings for linked platforms must be stowed in line bags. Figures 4-4, 4-5, and 4-6 show examples of sling configurations for 60K loads with two, three, four platforms.

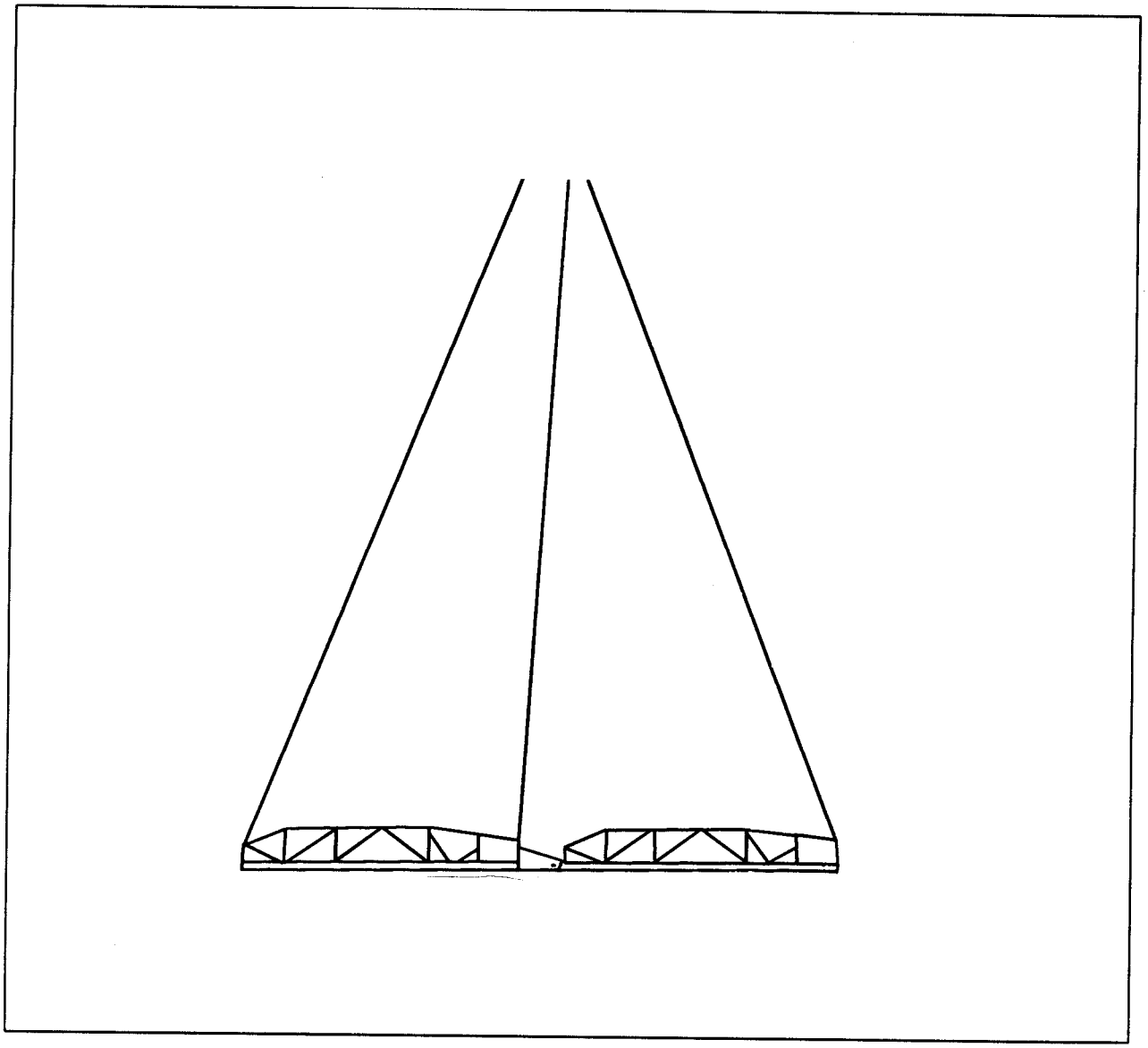


Figure 4-4. Arrangement of suspension slings for a two platform assembly

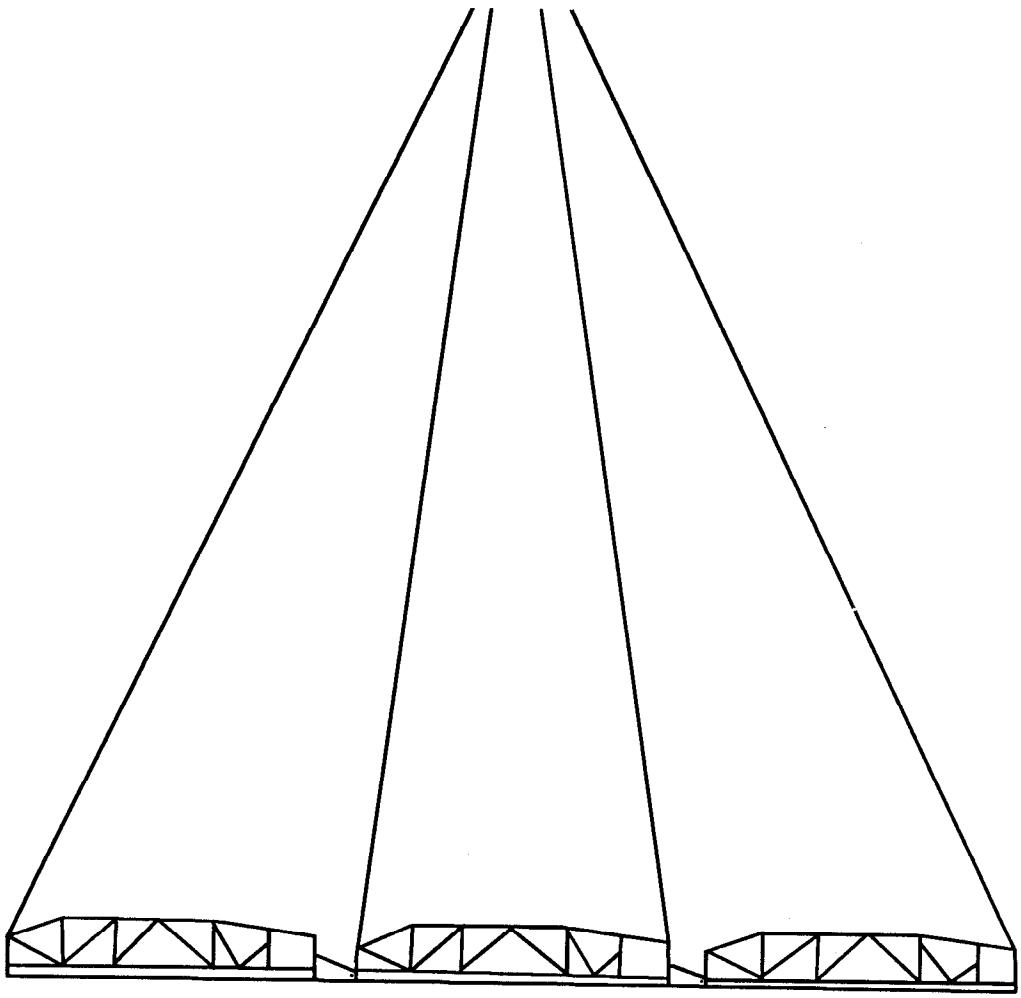


Figure 4-5. Arrangement of suspension slings for a three platform assembly

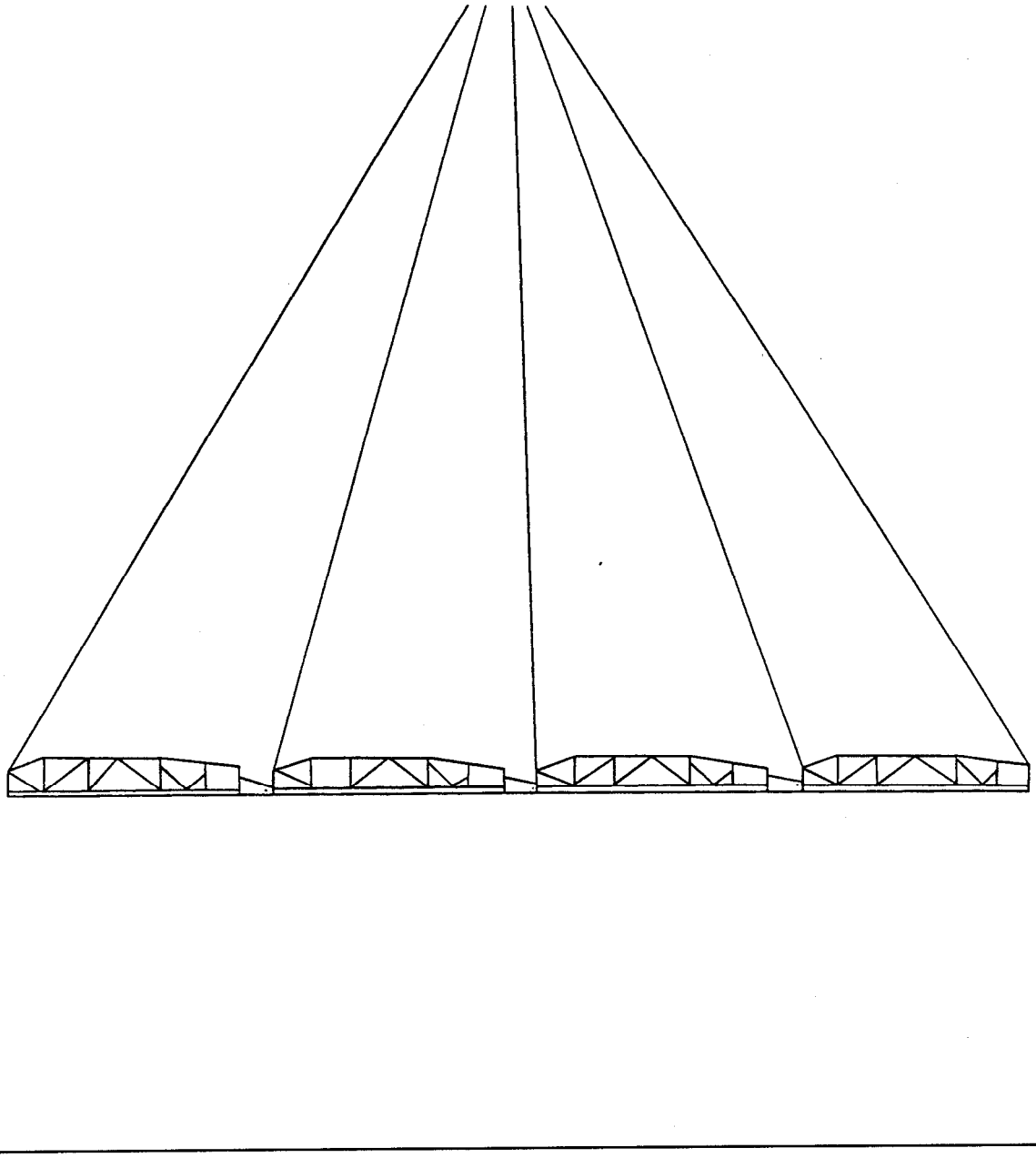
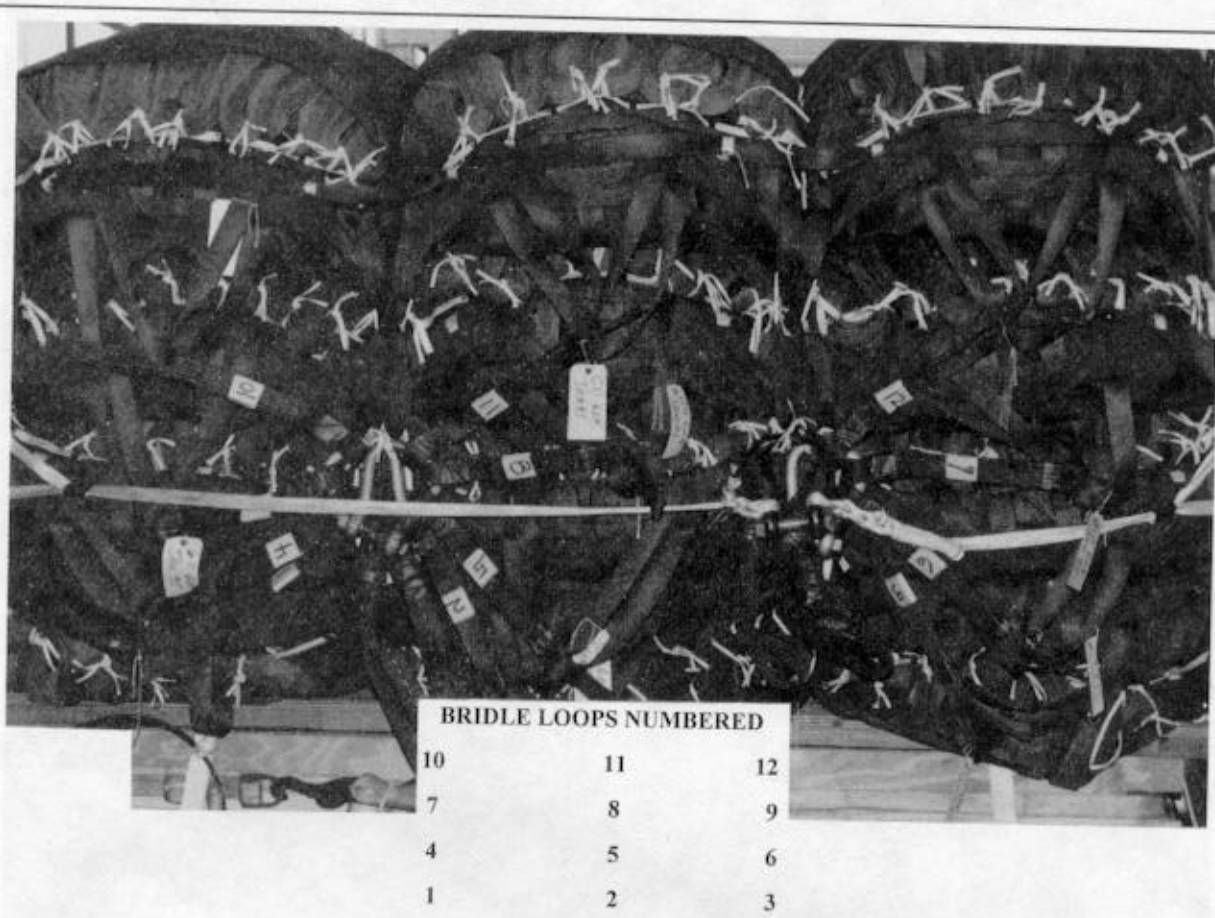


Figure 4-6. Arrangement of suspension slings for a four platform assembly

4-4. Cargo Parachutes

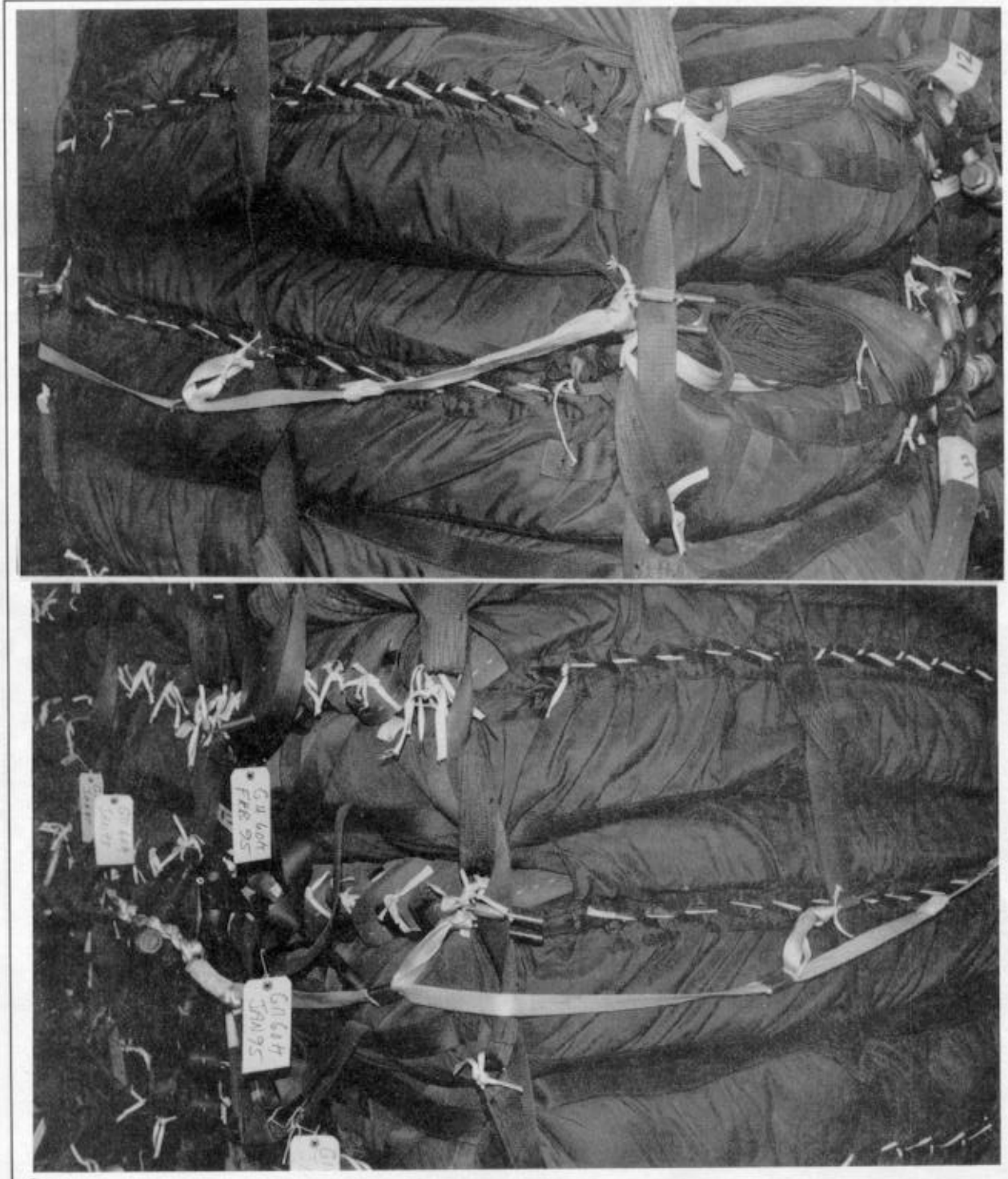
G-11 cargo parachutes (modified) are used for these loads. Before being placed on the load, each parachute requires a 60-foot (3-loop) extraction line be used as a riser extension. A cluster of 12 parachutes is shown in Figure 4-7. They are stacked on the rear most platform. Figure 4-8 shows the restraining of the 12 cargo parachutes.



Step:

1. Number each parachute on its bridle loop with masking tape. Numbering is done from left to right, bottom to top, regardless of the number of parachutes.
2. Tie the carrying handles on the deployment bags together with 1/2-inch tubular nylon webbing.
3. Cluster bridle loops 1, 4, 7, and 10 together with a large clevis.
4. Cluster bridle loops 2, 5, 8, and 11 together with a large clevis.
5. Cluster bridle loops 3, 6, 9, and 12 together with a large clevis.
6. Attach a 9-foot (2-loop), type XXVI nylon sling to the bolt of each clustering clevis.
7. Attach the ends of the 9-foot (2-loop), type XXVI nylon slings to one large deployment clevis.
8. Tie the clustering and deployment clevises to the bag carrying handles, with one turn double type I,1/4-inch cotton webbing.
9. Attach a 12-foot (4-loop), type XXVI nylon webbing deployment line to the bolt of the deployment clevis and the deployment spool of the three-point link.

Figure 4-7. Twelve cargo parachutes clustered



Step:

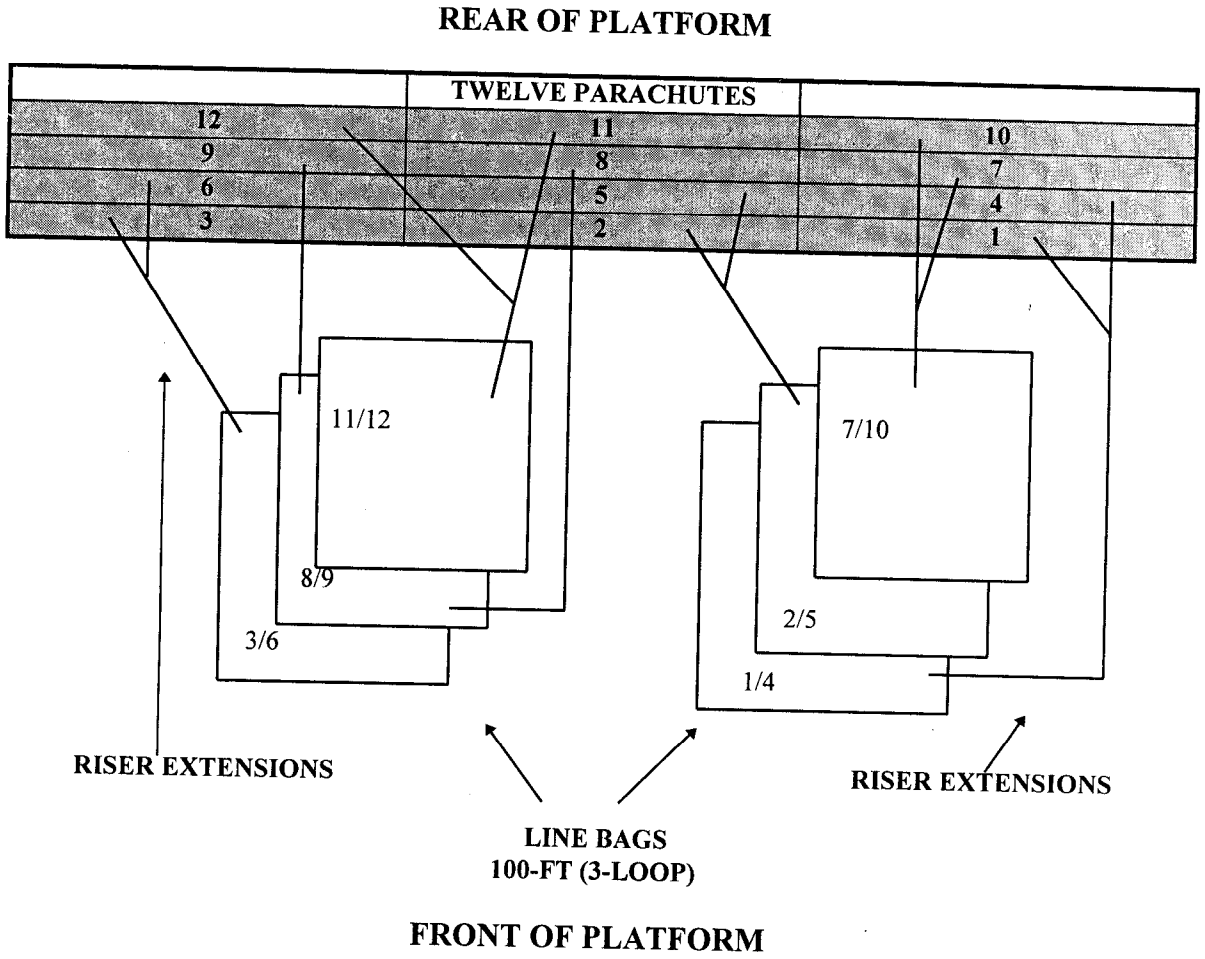
1. Restrain the 12 parachutes with 3 lengths of type X nylon webbing secured to clevises with load binders. Adapt the procedures shown in Figure 3-47.

2. Install two multicut straps to the deployment clevis.

Figure 4-8. Twelve parachutes restrained and multicut straps installed

4-5. Preparing Riser Extensions for Attachment to Release

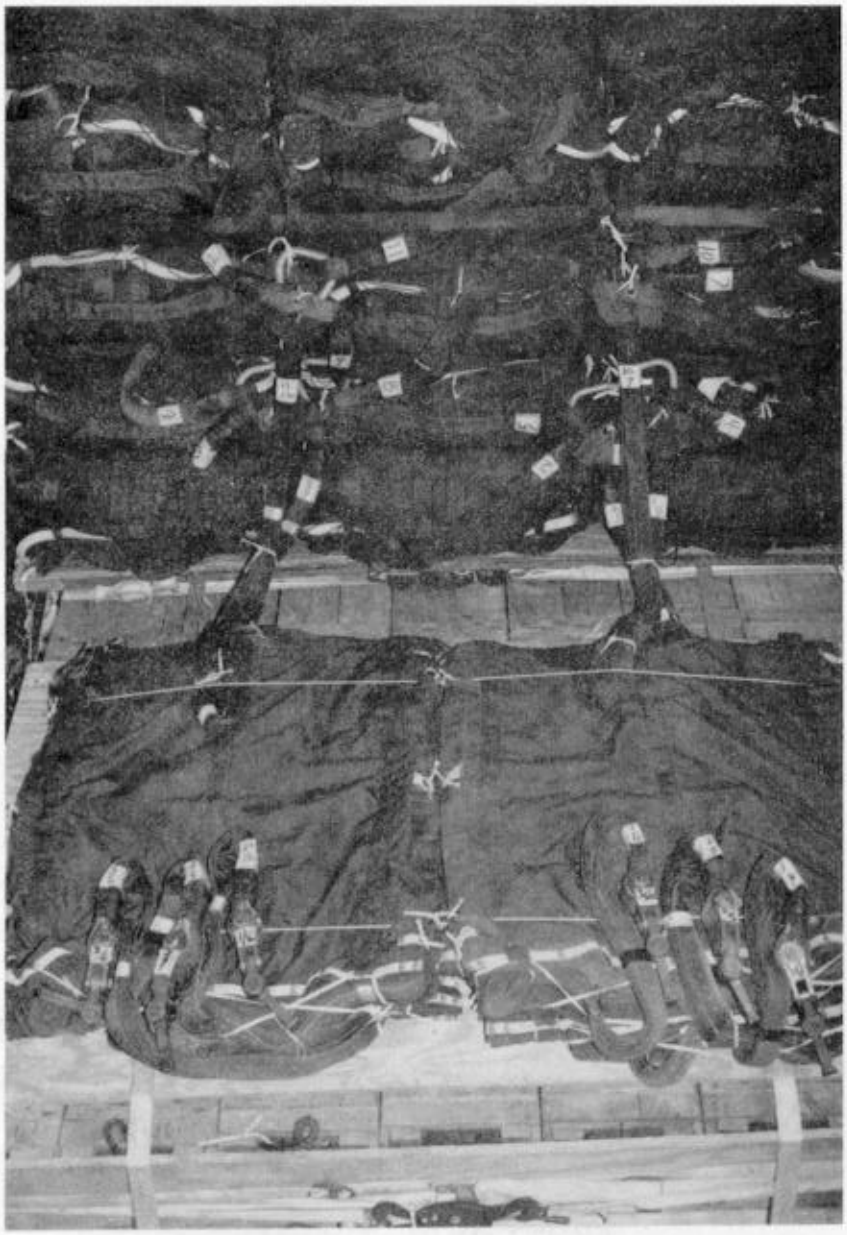
Prepare the riser extensions for attachment to the release as shown in Figure 4-9.



Step:

1. Cluster the 12 parachutes in the given order.
2. Number the 60-foot riser extension from eacn parachute with that parachute's number.
3. Pair each of the two parachutes as indicated.

Figure 4-9. Riser extensions prepared



Step:

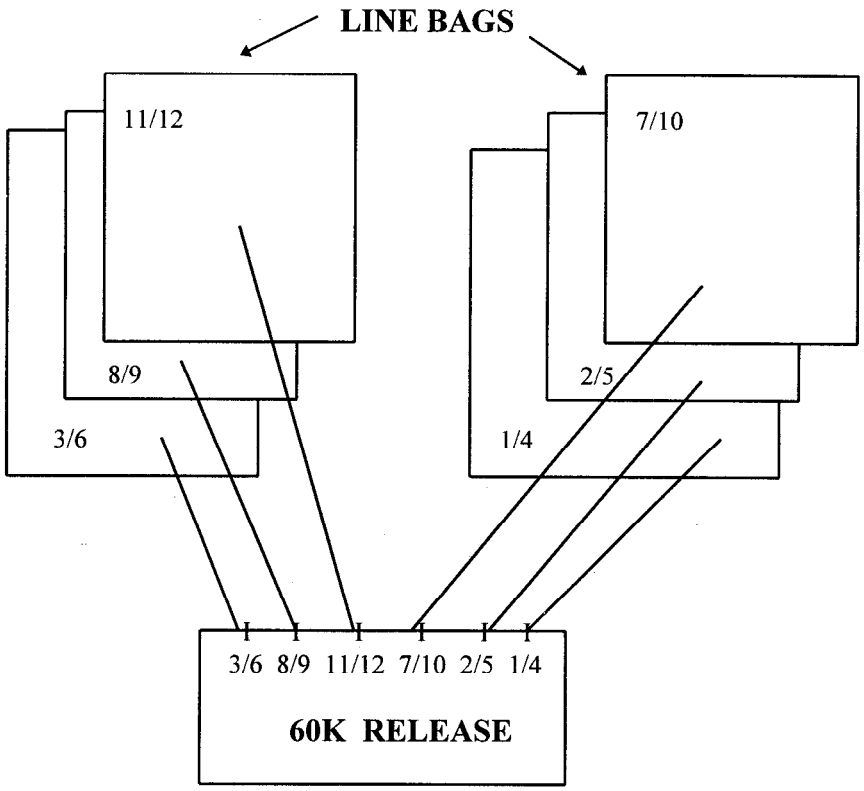
4. Attach each pair of 60-foot parachute risers as indicated above to the bell of a large clevis. Attach a 100-foot riser extension in a line bag to each clevis bolt. Tie the clevises to the bag carrying handles with one turn double of type I, 1/4-inch cotton webbing.

5. Place the 100-foot riser extension in line bags and stack. Face the permanent line tie of each line bag toward the parachutes.

Figure 4-9. Riser extensions prepared (continued)

4-6. Connecting Parachute Riser Extensions

Connect the parachute riser extensions as shown in Figure 4-10.



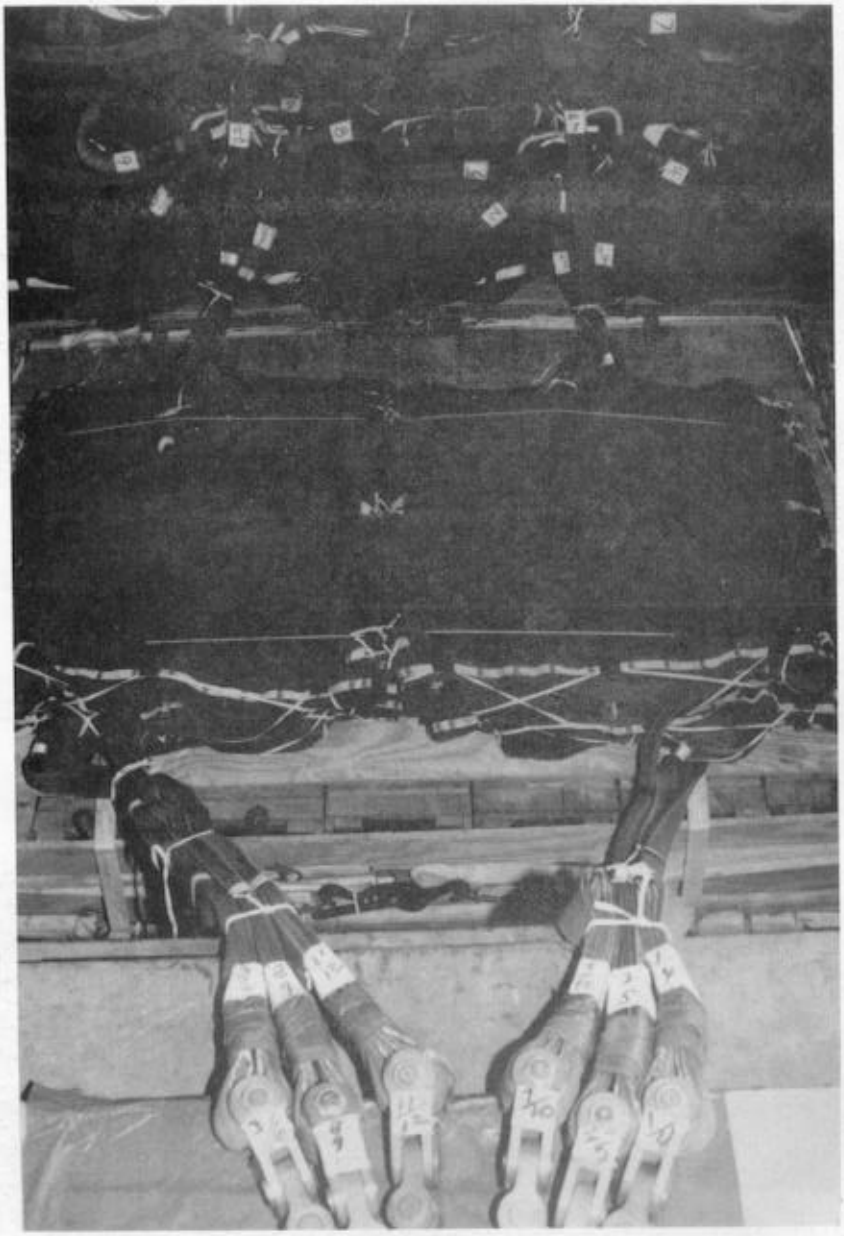
Step:

1. Label each of the 100-foot riser extensions with masking tape at the front end of each line bag, showing which parachutes are connected to the riser extension in that bag.

2. Align the six riser extensions with the connectors on the 60K release.

Note: For a 12 parachute load, the middle connector of the 60K release is not used.

Figure 4-10. Parachute riser extensions connected



Step:

3. Label the riser extensions at the release end. Label the connectors on the release, showing the parachutes to which they are connected.

Note: The riser extensions are <u>not</u> connected to the release at this time, if the load is a multi-platform load. This is because the platforms must be separated to transport and load them in the aircraft. These connections will be made aboard the aircraft.

Figure 4-10. Parachute riser extensions connected (continued)

4-7. 60K Release

The 60K release is the same basic release as the M-1 and the M-2, but with stronger components, a re-designed parachute connector system, and a 20- or 25-second timer mechanism which acts directly on the toggle lock slides instead of using gravity-type action.

a. Assembly and Disassembly. This is similar to the smaller releases. The toggle lock slides have a tendency to slip out of place. It is recommended that the user tape the two toggle lock slides together on the sides with paper masking tape. Figure 4-11 shows an exploded and assembled view of the 60K release with the parachute connectors.

b. Timer. The timer fits snugly in its recess and does not itself move, unlike the timer in the M-1 and M-2. Timer testing is similar to the older versions. The timer must be checked for time and must be 20 or 25 seconds (+ or - 3 seconds), depending upon which timer is installed.

c. Safety Tie on Arming Lanyard. The crimped loop in the metal lanyard cable is not reliable. Therefore, it is necessary to make a safety tie on the arming lanyard as shown in Figure 4-12.

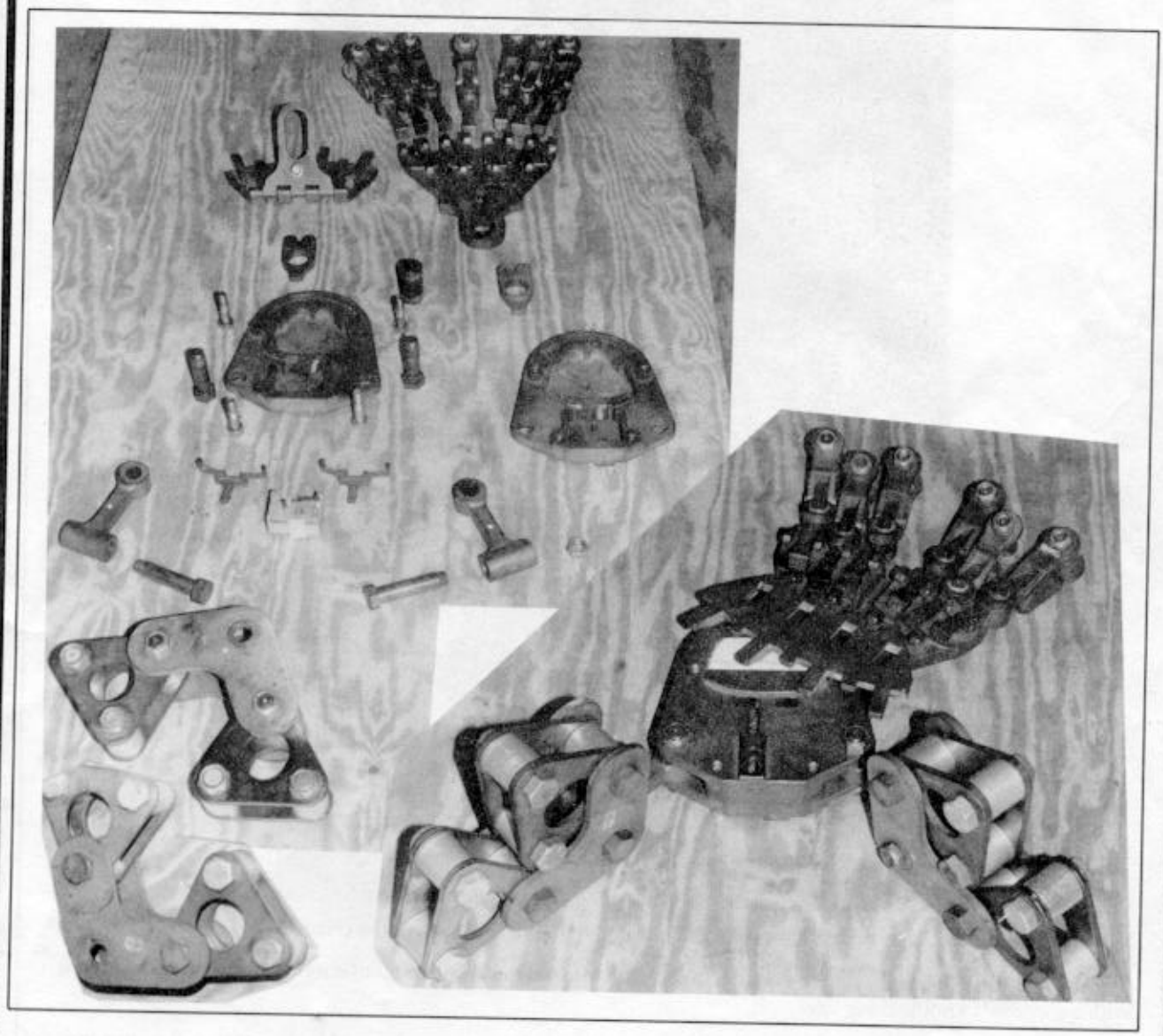


Figure 4-11. Exploded and assembled 60K release

4-8. 60K Extraction Force Transfer Coupling (EFTC)

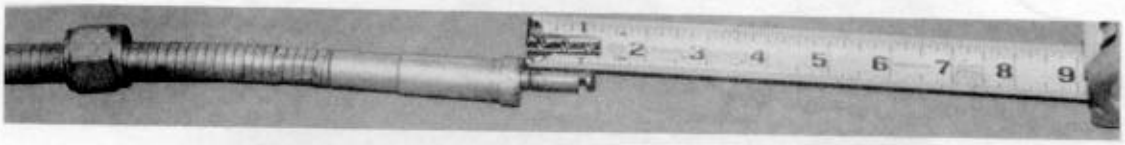
The 60K EFTC is similar in design and operation to the 35K EFTC system.

a. Actuator and Brackets. The actuator is always installed on the rear platform of a linked platform system, and in the same way as the 35K EFTC system.

b. Cable. The 60K EFTC cable is available in 12-, 16-, 20-, 24-, 28-, and 32-foot lengths. The cable is NOT interchangeable with the 35K cable. The extraction end of the 60K cable is different from the 35K cable. Inspection of the cable is critical. Inspection steps are given in Figure 4-13.

LATCH END

1 1/16"- 1 1/4"



ACTUATOR END

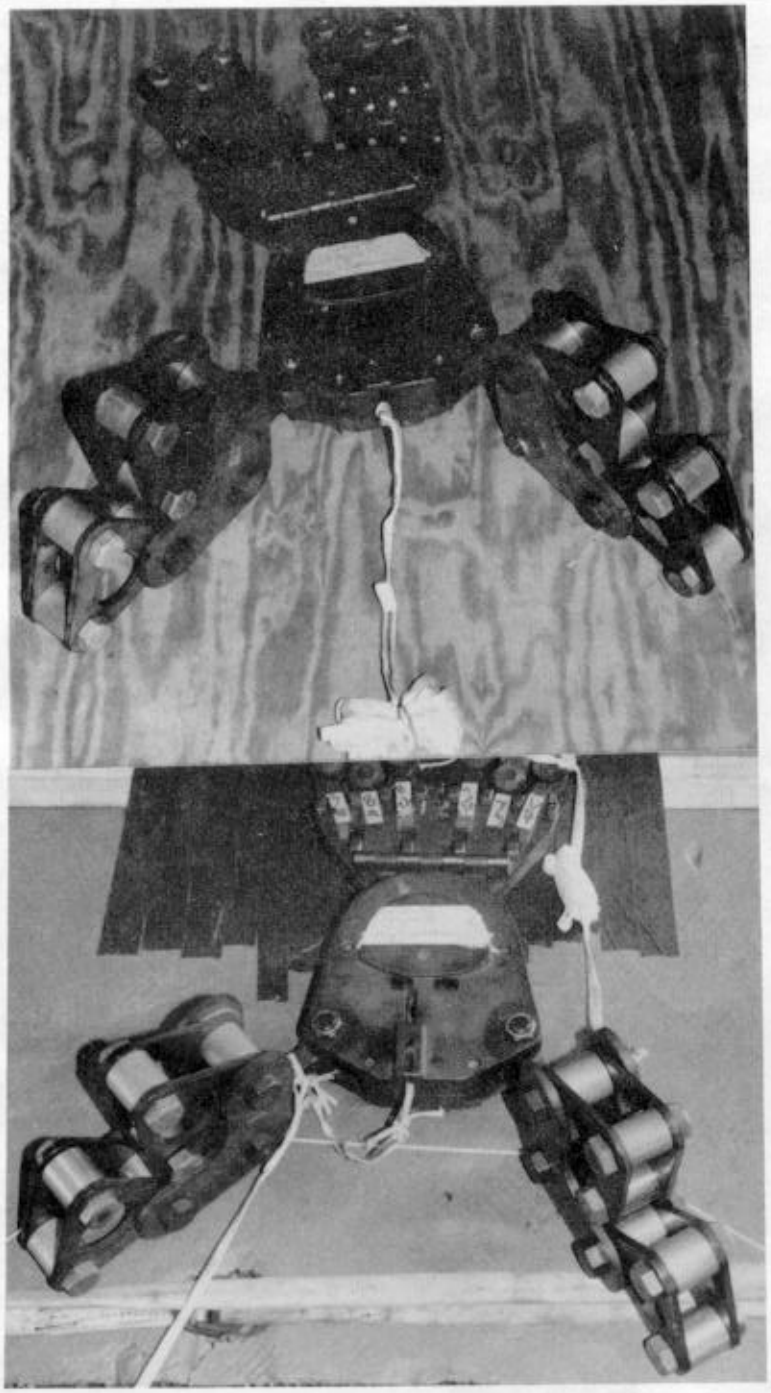
Step:

1. Connect the actuator end of the cable to the actuator.
2. Cock the actuator.
3. Measure the distance the inner cable protrudes from the cable housing.

Note: This measurement must be between 1 1/16 and 1 1/4 inches.

4. If the measurement does not fall within the range of step 3, make the adjustment at the actuator end of the cable by loosening the four Allen nuts on the threaded collar and moving the collar in or out until the measurement is correct.
5. Retighten the Allen nuts.

Figure 4-13. EFTC cable tested



Step:

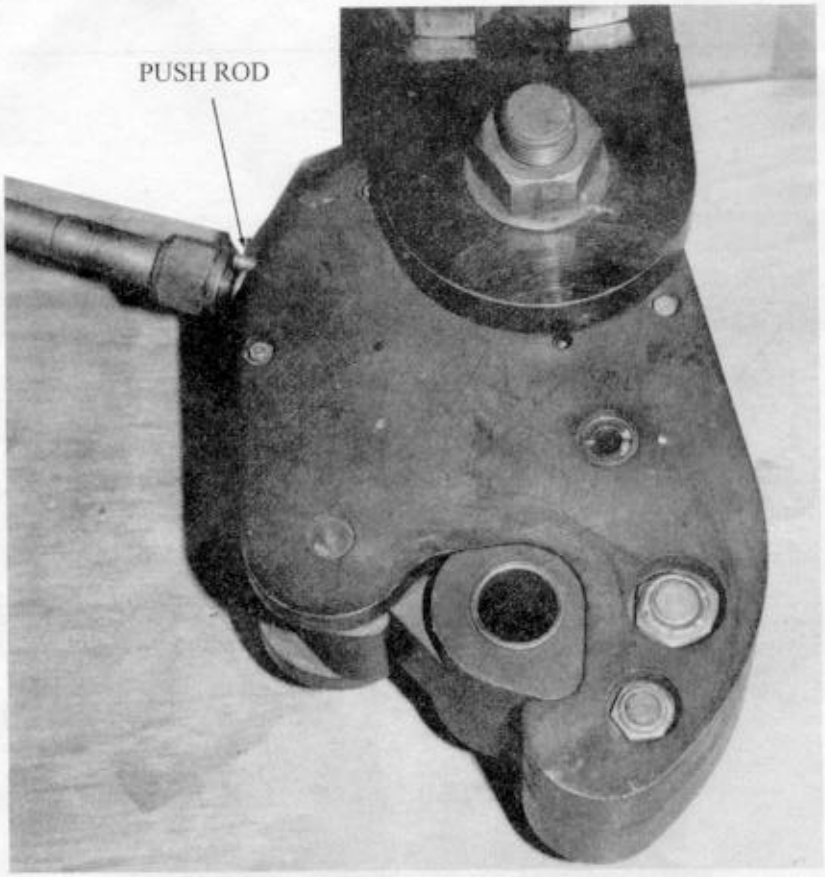
1. Girth hitch a length of type I, 1/4-inch, cotton webbing to the cable above the crimp.

2. Tie the type I, 1/4-inch, cotton webbing to the girth hitch in the 1/2-inch tubular nylon of the arming lanyard with a surgeon's knot/locking knot.

3. Tie the lanyard to a point forward of the release on the load. Ensure the lanyard is shorter than the apex point of the release.

Figure 4-12. Safety tie in arming lanyard

c. ***Latch Assembly.*** The latch assembly bolts to the extraction bracket in the conventional way. This latch assembly is NOT disassembled as part of normal maintenance. The cam of the three-point link fits into the latch similarly to the 35K system. Testing the latch does not require that the cable be connected. The latch test is given in Figure 4-14.



Step:

1. Place the cam of a three-point link (the entire link need not be attached) into the open latch. If the latch is not open, pull the push-pin all the way out, and turn the marked end of the screwdriver slot in the lock link shaft with a screwdriver until the hook of the latch opens.
2. With the cam in place, rotate the slot with the screwdriver so that the slot lines up with the white dot on the latch.
3. If the latch is locked, the white portion of the roller inside the latch should be visible in the peep hole. The push/pull rod is pushed all the way in with no part of the red mark visible.
4. Connect the cable to the latch assembly with the latch open.
5. Articulate the cable end with the fitting on the end of the slider.
6. Fit the cam of the three-point link into the latch and close the latch as previously outlined.
7. Install and tighten the cable nut.

Figure 4-14. Latch assembly tested and cable installed

d. Three-point Link Assembly. The three-point link is heavier than the 35K link. The assembly without the extraction rope can be viewed in Figure 4-15. The deployment line connects conventionally to the link. The extraction end has a large spool to accommodate the extraction rope, which is similar to the extraction rope of the 42K LAPE extraction system. The spool also has a two-piece collar (ply spreader) to accommodate a 6-loop extraction line for loads under 42K.

Note: The entire latch and link assembly can be raised for transport by fitting a two-pin, quick release, NSN 5340-00-702-1301 (actuator pin) in the sides of the extraction bracket. Remove the pins on the aircraft and fully tighten the main nut.

Figure 4-15. Three-point link assembly

4-9. On the Aircraft

The load covers are installed (depending on the load), the suspension slings and riser extensions are attached to the release, the platforms are connected together, and the extraction system is put together. The joint airdrop inspection is performed. Care must be taken with suspension systems as complex as these, that the slings will not catch or bind on any part of the load. The suspension slings are, on multiple loads, stowed in line bags. The individual rigging manual for each particular load will give load covering and sling preparation and safetying procedures.

4-10. Derigging

It is very important that all personnel be well away from the truss assemblies when they are lowered. They are extremely heavy.

WARNING

Personnel disconnecting the pins from the braces and rail extensions must stand to the inside of the trusses. Be sure the truss assemblies drop away from personnel.

GLOSSARY

ACB	attitude control bar
AFB	Air Force base
AFR	Air Force regulation
AFTO	Air Force technical order
ATTN	attention
CB	center of balance
DA	Department of the Army
DC	District of Columbia
DD	Department of Defense
EFTC	extraction force transfer coupling
FARE	Forward Area Refueling Equipment
FM	field manual
ft	foot/feet
G	gravity force
HQ	headquarters
in	inch
KIAS	knots indicated air speed
kw	kilowatt
LAPE	low-altitude parachute-extraction
LAPES	low-altitude parachute-extraction system
lb	pound
NA	not applicable
NO	number
NSN	national stock number
PEFTC	extraction force transfer coupling (platform)
SL/CS	static line/connector strap
TM	technical manual
TO	technical order
TRADOC	United States Army Training and Doctrine Command
US	United States
wt	weight

REFERENCES

*AFJMAN 24-204/TM38-240 NAV SUP PUB 505/MOC 4030.19F/DLPM 4145.3	Preparing Hazardous Materials for Military Air Shipments 25 Nov 94
FM 10-500/TO 13C7 series	Airdrop of Supplies and Equipment 1 Nov 90
FM 10-510/TO 13C7-2-451	Airdrop of Supplies and Equipment: Rigging 1/4-Ton Trucks 15 May 75
FM 10-512/TO 13C7-1-8	Airdrop of Supplies and Equipment: Rigging Typical Supply Loads 31 Aug 79
FM 10-513/TO 13C7-3-51	Airdrop of Supplies and Equipment: Rigging 3/4-Ton Cargo Trailers 25 Jun 79
FM 10-516/TO 13C7-1-13	Airdrop of Supplies and Equipment: Reference Data for Airdrop Platform Loads 31 Oct 83
FM 10-535/TO 13C7-40-11	Airdrop of Supplies and Equipment: Rigging 5-Kw Generator Set With Portable Floodlight Set 14 Nov 85
FM 10-537/TO 13C7-1-19	Airdrop of Supplies and Equipment: Rigging Forward Area Refueling Equipment (FARE) 28 Feb 83
**FM 10-500-53/TO 13C7-18-41	Airdrop of Supplies and Equipment: Rigging Ammunition 1May 96
TM 10-1670-208-20&P/ TO 13C3-4-12	Organizational Maintenance Manual Including Repair Parts and Special Tools List for Platforms, Types II Modular and LAPES/Airdrop Modular 10 Aug 78

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*AFJMAN 24-204/TM 38-250 has superseded AFR 71-4/TM 38-250 (15 January 1988). Change 1 reflects this change. The basic manual still references the superseded publication. You may wish to make pen and ink changes to update the old reference citations accordingly.

**FM 10-500-53/TO 13C7-18-41/MCRP 4-3.8 has superseded FM 10-553/TO 13C7-18-41 (4 December 1981). Change 1 reflects this change. The basic manual still references the superseded publication. You may wish to make pen and ink changes to update the old reference citation accordingly.

REFERENCES

TM 10-1670-278-23&P/TO 13C5-26-2/ NAVAIR 13-1-27	Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 15-Foot Diameter, Cargo Extraction Parachute 6 Nov 89
TM 10-1670-279-23&P/TO 13C5-27-2/ NAVAIR 13-1-28	Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 22-Foot Diameter, Cargo Extraction Parachute 30 Aug 89
TM 10-1670-280-23&P/TO 13C5-31-2/ 13-1-31	Unit and Intermediate DS Maintenance Manual Including Repair Parts NAVAIR and Special Tools Lists for Parachute, Cargo Type, G-11B, and G-11C 5 Aug 91
*TM 10-1670-298-20/ TO 13C7-49-11	Unit Maintenance Manual (Including Repair Parts and Special Tools List): Container Delivery System. 15 Sept 95
TM 10-1670-268-20&P/ TO 13C7-52-22	Organizational Maintenance Manual With Repair Parts and Special Tools List: Type V Airdrop Platform 1 June 86
TM 10-1670-286-20 &P/ TO 13C5-2-41	Unit Maintenance Manual for Sling/Extraction Line Panel (Including Stowing Procedures) 1 Apr 86
AFTO Form 22	Technical Order Publication Improvement Report
DA Form 2028	Recommended Changes to Publications and Blank Forms
**Shipper's Declaration for Dangerous Goods	Special Handling Data/Certification
DD Form 1748 Series	Joint Airdrop Inspection Record

*TM 10-1670-298-20&P has superseded TM 10-1670-240-20/TO 13C7-49-11 (April 1970).Change 1 reflects this change. The basic manual still references the superseded publication. You may wish to make pen and ink changes to update the old reference citation accordingly.

**Shipper's Declaration for Dangerous Goods has superseded DD Form 1387-2 (February 1982). Change 1 reflects this change. The basic manual still references the superseded publication. You may wish to make pen and ink changes to update the old reference citations accordingly.

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